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DEPARTMENT OF PUBLIC SERVICE REGULATION
BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MONTANA

IN THE MATTER of the Petition of Greycliff Wind Prime, LLC to Set Terms and Conditions for Qualifying Small Power Production Facility Pursuant to M.C.A. § 69-3-603	UTILITY DIVISION DOCKET NO. D2015.8.64

GREYCLIFF WIND PRIME, LLC'S RESPONSE TO MONTANA PUBLIC SERVICE COMMISSION REQUESTS PSC-056 THROUGH PSC-066

PSC-056
Regarding: Electronic Files
Witness: Schiffman
Please provide Excel-readable files of all Figures, Tables, avoided cost calculations, and ancillary information.

RESPONSE: See attached Excel spreadsheets entitled "Review of NWE Avoided Cost Projections – Background", and PMRG Greycliff Avoided Cost Projection - Feb 2016. The former is attached hereto and the latter was produced in response to NWE-22(b).

PSC-057
Regarding: Net Position
Witness: Schiffman

At p. 18 you state: "In examining the monthly simulation results, NWE is almost always in a net purchase position." Please define "almost always" in this case.

RESPONSE: In the spreadsheet entitled "13c" provided by NorthWestern in response to Greycliff data requests, reported Market Purchase from the PowerSimm modeling are always substantially higher than reported Market Sales. For example, over the forecast period, monthly Market Purchases average 130,561 MWh in Heavy Load hours, compared to Market Sales which average 1,649 MWh. In Light Load hours, Market Purchases average 48,937 MWh, compared to Market Purchases which average 9,061 MWh. Similarly, in Mr. Hansen's testimony, Exhibit (LPH-1), Offset Purchases quantities are considerably higher than Excess Sales quantities. Finally, these data were also provided by NorthWestern in response to data request PSC-047 PowerSimm Output.

PSC-058
Regarding: FERC Order No. 69
Witness: Schiffman

At pp. 18-19 you argue that if the utility were long and CU4 were in the money, prudency would require that NorthWestern sell additional energy into the market rather than curtail generation at CU4. In this case you believe that Greycliff production should be assigned the market price. Please describe how this logic conforms to this language from FERC Order No. 69:

A qualifying facility may seek to have a utility purchase more energy or capacity than the utility requires to meet its total system load. In such a case, while the utility is legally obligated to purchase any energy or capacity provided by a qualifying facility, the purchase rate should only include payment for energy or capacity which the utility can use to meet its total system load.
These rules impose no requirement on the purchasing utility to deliver unusable energy or capacity to another utility for subsequent sale. (18 CFR § 292.303).

RESPONSE: This is really a legal question, and I am not a lawyer. However, it is clear to me that energy that can be sold into the wholesale market at a profit is "usable" energy in operating a power system. Put another way, if energy is provided by a QF to NorthWestern, and used strictly to "serve native load", then energy that is freed up from other generating resources, but that can be sold at a profit into the wholesale market is usable energy. For a utility company to forego economic sales opportunities would be imprudent. Accurate determination of avoided cost, especially using a Differential Revenue Requirement method, must take into account market purchase and sales activity. This has been a long accepted practice in developing avoided cost projections. A utility rate case is comparable, where net wholesale transactions activity is built into the overall test year revenue requirement. To do otherwise would be to permit a utility to resell a QF's energy without accounting for how those sales should be attributed to ratepayer's costs and would understate avoided costs.

PSC-059
Regarding: Electricity Price Indices
Witness: Schiffman

At p. 22 you testify that Powerdex has averaged $3.68/MWh lower than ICE On-Peak,

$0.89/MWh lower Off-Peak, and $2.48/MWh lower overall. Please explain, if possible, the source of these differences.

RESPONSE: I don't have a definitive explanation for these differences. It is likely influenced by trading volume levels and differences in trading activity related to each index.

PSC-060
Regarding: Data Quality
Witness: Schiffman

Please provide a basis for your claim at p. 36 that the data underlying Mr. LaFave's calculation are based on low volume, reported transactions that are of low validity, and that do not represent market fundamentals.

RESPONSE: Both Mid-C and Powerdex are indices derived from reported trades by market participants. Based on the Powerdex Mid-C data reported by NorthWestern in response to data requests, in the spreadsheet entitled D2015.8.64 Exhibit___(BJL-1) with Support and Analysis, the average volumes are shown below:

Average Volume (MW) Column Labels													
Row Labels	1	2	3	4	5	6	7	8	9	10	11	12	Grand T
2010	**480**	**449**	**471**	**559**	**465**	**593**	**434**	**428**	**366**	**405**	**511**	**507**	**472**
Off Peak	456	404	444	517	444	571	415	420	352	379	476	469	445
Peak	502	483	490	589	483	609	448	434	378	425	540	536	493
2011	**602**	**670**	**614**	**617**	**609**	**543**	**636**	**647**	**498**	**517**	**720**	**547**	**601**
Off Peak	519	599	546	572	640	550	619	610	461	537	744	546	579
Peak	673	724	663	650	583	538	650	673	527	501	701	547	619
2012	**533**	**518**	**625**	**708**	**603**	**652**	**729**	**747**	**505**	**597**	**737**	**790**	**646**
Off Peak	510	458	561	675	576	683	658	699	504	585	751	762	619
Peak	554	561	671	734	625	629	789	782	506	605	725	814	667
2013	**662**	**631**	**764**	**840**	**701**	**736**	**774**	**735**	**665**	**561**	**682**	**619**	**698**
Off Peak	608	644	674	760	634	696	790	672	575	556	620	550	647
Peak	704	621	836	899	754	769	762	781	744	565	732	677	737
2014	**582**	**711**	**797**	**807**	**753**	**776**	**731**	**680**	**556**	**519**	**782**	**640**	**694**
Off Peak	496	610	681	762	718	776	700	624	536	506	804	562	649
Peak	650	786	887	839	780	776	756	724	572	529	764	701	730
2015	**556**	**639**	**566**	**501**	**550**	**593**	**695**	**624**	**467**	**521**	**496**		**570**
Off Peak	567	618	492	436	508	488	661	512	433	470	473		518
Peak	547	655	625	549	586	669	722	712	495	558	516		610
Grand Total	**569**	**603**	**640**	**672**	**614**	**649**	**666**	**643**	**510**	**520**	**679**	**620**	**615**

Daily average power demand in the Pacific Northwest usually varies between 20,000 and 30,000 MW, depending on the season. The reported Powerdex volumes are a small fraction of generation and demand in the region.

For the ICE Index, reported volumes are higher, averaging 3,400 MW on average MW basis since 2010. At that level, volumes trading on the InterContinental Exchange represent 11 to 17 percent of average MW demand.

PSC-061
Regarding: System Balancing
Witness: Schiffman
Please provide a basis for your claim at p. 36 that the major power providers in the Pacific Northwest rely upon hydro assets and owned generation rather than real-time Mid-C transactions, in order to balance and regulate the system.

RESPONSE: Based on the Powerdex Mid-C data reported by NorthWestern in response to data requests, in the spreadsheet entitled D2015.8.64 Exhibit___(BJL-1) with Support and Analysis, the average volumes are shown below:

Average Volume (MW)	Column Labels												
Row Labels	1	2	3	4	5	6	7	8	9	10	11	12	Grand T
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Off Peak	567	618	492	436	508	488	661	512	433	470	473		518
Peak	547	655	625	549	586	669	722	712	495	558	516		610
Grand Total	**569**	**603**	**640**	**672**	**614**	**649**	**666**	**643**	**510**	**520**	**679**	**620**	**615**

Daily average power demand in the Pacific Northwest usually varies between 20,000 and 30,000 MW, depending on the season. The reported Powerdex volumes are a small fraction of generation and demand in the region, and the system is being balanced by generation assets.

PSC-062
Regarding: Transmission Upgrades
Witness: Schiffman

Please provide citations to the FERC findings that support your claim at p. 36 that NorthWestern's Transmission Network Upgrade proposal violates FERC policy. Please describe the relevancy of these findings in this instance.

RESPONSE: *See* pages 49-54 of attached document entitled PURPA Title II Compliance Manual for discussion of FERC policy on network upgrade costs. This was attached in Response to NWE-018.

PSC-063
Regarding: Power Price Forecasting
Witness: Schiffman

At p. 38 you testify: "I believe this [power price forecast] adjustment is inappropriate, as Greycliff has previously established a LEO, and the date when the LEO was established, or a date near then, is more appropriate for use in developing an avoided cost estimate for Greycliff."

RESPONSE: Please explain why the power price forecast beginning date should match Greycliff's alleged LEO establishment date, rather than its expected commercial operation date.

I am advised by Greycliff counsel that a QF is entitled to a calculation of avoided cost at the time a LEO is established. As such, the avoided cost projections should be based on expectations and data assumptions derived close to the time the LEO was established.

PSC-064
Regarding: NPCC Forecast
Witness: Schiffman

At p. 41 you testify that your first avoided cost estimate reflects the NPCC medium level electricity price forecast. Was this forecast basis-adjusted for Montana?

RESPONSE: No, I did not make a basis adjustment for Montana because I did not think it important or appropriate. I would note other than an adjustment that may or may not be appropriate, NorthWestern's forecast does not do so either.

PSC-065
Regarding: Capacity Credit Calculation
Witness: Schiffman

At p. 41 you explain that your avoided cost forecast reflects a 5% capacity credit based on the avoided capital cost of an aeroderivative GE LMS100 combustion turbine, which you claim is a likely portfolio addition.

Please provide, in Excel-readable format, the calculation of this credit.

a. Please explain why you believe that a GE LMS100 is a likely addition to NorthWestern's portfolio.

RESPONSE: Given NorthWestern's stated concern about regulating its system, and integrating renewable resources, and the size of the NorthWestern system, I believe a GE LMS100 would be an attractive hybrid resource for use in both regulating the system, and providing energy and peak generating capacity under certain conditions.

b. NorthWestern's 2016 Plan lists a GE 7EA CT as a preferred capacity resource in almost every scenario, including the economically optimal scenario (Docket No. N2015.11.91, Electricity Supply Resource Procurement Plan, Volume 1, Tables 12-1 and 12-2). Please provide a calculation of the credit using this resource instead.

RESPONSE: Please see attached spreadsheet entitled PMRG Calculations of Greycliff Capacity Value. Also, please see table below:

Estimated Capacity Value of Greycliff Project	
LMS 100	
Installed Cost ($/kW)	$1,250
NorthWestern Weighted Average Cost of Capital (%)	7.03%
NorthWestern Estimated Levelized Fixed Charge Rate (%)	10.03%
Carrying Cost ($/kW/Year)	$125.38
Greycliff Effective Capacity at 5% ELCC	1.25
Greycliff Expected Energy Production (MWh)	88,043
Greycliff Levelized Capacity Value ($/MWh)	$1.78
NorthWestern Estimated SCGT (Resource Plan Table 12-1)	
Installed Cost ($/kW)	$997
NorthWestern Weighted Average Cost of Capital (%)	7.03%
NorthWestern Estimated Levelized Fixed Charge Rate (%)	10.03%
Carrying Cost ($/kW/Year)	$100.00
Greycliff Effective Capacity at 5% ELCC	1.25
Greycliff Expected Energy Production (MWh)	88,043
Greycliff Levelized Capacity Value ($/MWh)	$1.42

PSC-066
Regarding: Greycliff Production Estimate
Witness: Schiffman

At p. 41 you state that the most current estimate of actual Greycliff production is 88,043 MWh/yr. Please provide a basis for this estimate.

RESPONSE: The 88,043 MWh/yr generation estimate was provided to me by Greycliff, as the most recent production estimate for the project.